



Renewable Energy Ventures (K) Ltd



Clean, Smart, Efficient &
Affordable Energy

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About Us

REV

Consulting

RE and EE project
development

Solanterns
Initiative

Vision

To deliver clean, efficient and affordable energy through innovative generation, distribution and financing solutions.

Solanterns Initiative

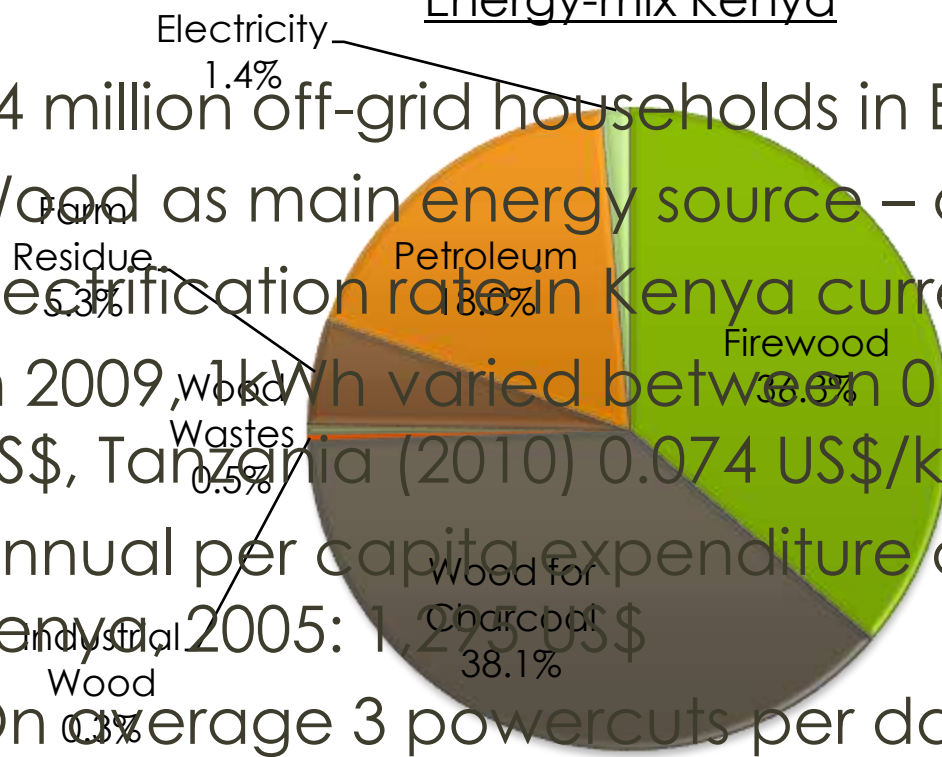


Replacing 1 million kerosene lanterns with solar lanterns.

Basic Energy Stats

Energy-mix Kenya

- 34 million off-grid households in East Africa
- Wood as main energy source – over 75%
- Electrification rate in Kenya currently at 23%
- In 2009, 1kWh varied between 0.15 and 0.20 US\$, Tanzania (2010) 0.074 US\$/kWh
- Annual per capita expenditure on Energy in Kenya 2005: 1,275 US\$
- On average 3 powercuts per day



Total Energy Consumption for all Sectors in Percent (Year 2000)
(Kenya Ministry of Energy, 2006)

Growth Projections for Energy Demand - Kenya

- Growing at a rate of 3% per year from 1990 to 2007¹
- Electricity consumption per capita is forecasted to increase by 29% to 10 TWh in 2011 -2015²
- Total demand for electricity of 9 GWh per year by 2015 (09/10: 5,3 GWh)³
- Energy demand to increase by 60% by 2015 relative to 2009¹

Sources: 1: Worldbank, (2010): World Development Indicators 2010.

2: Kenya Power Report Q2 2011, Business Monitor International, April 2011.

3: Kenya Ministry of Energy, (2006): Millennium Development Goals Needs Assessment Report

Growth Projections for Supply - Kenya

- Expected 6.5% average annual growth in electricity generation in 2011 – 2015
- Electrification rate is set to increase to 40% by 2030
- Government plans to provide access to electricity for an additional 1 million homes by 2012
- independent power producers (IPPs) will increase the power capacity by 1,353 MW by 2014.

Source: Dr Grant Ballard-Tremeer (2011): Africa Renewable Energy Access Advisory Services (AREAS) Program, Scoping Paper: Kenya.



Rural Electricity Access and Connectivity Targets (REA 2008)

Period	Rural Population with Electricity in %	Rural population with Electricity total
2008	10%	750,000
08-12	22%	1,400,000
13-22	65%	5,050,000
23-30	100%	9,060,000

Growth Areas and Technologies for Energy

- Geothermal Potential in Kenya – 7,000MW
- Grid tied biogas (larger than 250kW) – 40MW
- Wind (Projects in the pipeline) – 500MW
- Small Hydro – 300MW
- Large Hydro – 200 to 300MW
- Grid Tied solar PV - not yet interesting given the FiT
- Portable off grid lighting – 50%
- Kenya is currently considering a LNG terminal for use in power generation.
- Taskforce created on Nuclear Energy.....(don't ask!)

Interesting new Instruments

Global momentum around renewable energy has resulting in initiatives locally that seek to grow the space.

- FiTs – Kenya, Uganda and TZ. Rwanda in progress
- AfD's credit line through local banks
- IFC's CIPA program
- IFC/EIB program
- IFC's AREAS program (in development)
- World Bank's Climate Innovation Centers
- SREP
- Kenya's proposed Green Energy Fund
- DfID's Advanced Market Commitments (AMCs)

Feed-in Tariffs in East Africa

Renewable Energy Source	Kenya	Uganda	Tanzania
Wind	12.0/kWh	12.4/kWh	
Geothermal	8.5/kWh	7.7/kWh	Not technology standardized tariffs: 8.8/kWh in dry season (Aug.-Nov.)
Biomass	8.0/kWh	10.3/kWh	
Solar	20.0/kWh	36.2/kWh	
Small Hydro	8-12/kWh Depending on capacity	7.3-10.9/kWh Depending on capacity	6.6/kWh in wet season (Jan.-Jul., Dec.)

Prices are in US Cents, payment period 20 years

Key Challenges in turning potential into projects

- \$\$\$ - Limited investments/investors
- Project developers have inadequate equity and limited experience
- Risk averse debt providers.
- Long development cycles for RE Projects
- RE perceived as “expensive”
- Govt. capacity to negotiate PPAs
- Infrastructure constraints.

A tale of two approaches

- PPP
 - Sovereign Guarantees
 - FiTs
 - Risk sharing e.g. GDC in Kenya
 - Feasibility Studies e.g. small hydro
 - Resource maps e.g. Wind.
- Govt
 - Increase in taxes
 - Directed govt. expenditure
 - Choose winners
 - Leave the smaller scale projects to local SMEs

Why PPPs make sense

- Scale – distributed solutions
- Investments – significant resources beyond govt. resources.
- Diversity – of RE resources and technologies.
- Implementation – Capacity constraints
- Risks arising from regime changes.

Supporting PPPs

- Streamlined processes – permitting, licencing etc
- Clear policies e.g. FiTs
- Risk mitigation e.g.
 - sovereign guarantees.
 - Exploration risk buy down.
 - Data generation and dissemination



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